

CLAIMS:What is claimed:

1. A method for use in a process control system having a plurality of input/output (I/O) networks, the method comprising the steps of:

5 creating a first unique network identification tag for a first one of the I/O networks;

creating a second unique network identification tag for a second one of the I/O networks;

10 storing the first network identification tag in a first device communicatively coupled to the first I/O network;

storing the second network identification tag in a second device communicatively coupled to the second I/O network;

15 making the first network identification tag available on the first I/O network; and

making the second network identification tag available on the second I/O network.

2. The method of claim 1, wherein the step of creating the first unique network identification tag for the first I/O network includes the steps of:

20 creating identification tags for two or more devices, wherein the devices are communicatively coupled to create a communication pathway from a user interface to the first I/O network; and

combining the identification tags for each of the two or more devices to create the first network identification tag.

3. The method of claim 2, wherein the step of combining the identification tags includes the step of concatenating the identification tag for each of the two or more devices to create the first network identification tag.

4. The method of claim 2, further including the step of creating a unique identification tag for at least one of the two or more devices.

5. The method of claim 1, wherein the step of creating the first network identification tag for the first I/O network includes the steps of:

5 creating a first unique identification tag for a first device communicatively coupled to an user interface and to the first I/O network; and

using the first identification tag to create the first network identification tag.

6. The method of claim 5, wherein the step of creating the first unique identification tag for the first device includes the step of creating the first unique identification tag for a process controller communicatively coupled to the user interface and to the first I/O network.

7. The method of claim 5, wherein the step of creating the first unique identification tag for the first device includes the step of creating the first unique identification tag for an I/O device communicatively coupled to the user interface and to the first I/O network.

8. The method of claim 5, wherein the step of creating the first unique network identification tag for the first I/O network includes the steps of:

creating a second identification tag for a second device communicatively coupled to the first device and to the first I/O network; and

20 using the second identification tag to create the first network identification tag.

9. The method of claim 8, wherein the step of creating the first network identification tag for the first I/O network includes the step of concatenating the first identification tag and the second identification tag to create the first network identification tag.

10. The method of claim 1, wherein the step of storing the first network identification tag in the first device communicatively coupled to the first I/O network includes the step of storing the first network identification tag in a process controller communicatively coupled to the first I/O network.

5 11. The method of claim 1, wherein the step of storing the first network identification tag in the first device communicatively coupled to the first I/O network includes the step of storing the first network identification tag in an I/O device communicatively coupled to the first I/O network.

10 12. The method of claim 11, wherein the step of storing the first network identification tag in the I/O device communicatively coupled to the first I/O network includes the step of storing the first network identification tag in an I/O interface card communicatively coupled to the first I/O network.

15 13. The method of claim 11, wherein the step of storing the first network identification tag in the I/O device includes the step of storing the first network identification tag in an I/O carrier communicatively coupled to the first I/O network.

14. The method of claim 1, wherein the step of making the first network identification tag available on the first I/O network includes the step of transmitting the first network identification tag on the first I/O network in response to a request for the first network identification tag.

15. The method of claim 1, wherein the step of making the first network identification tag available on the first I/O network includes the step of periodically transmitting the first network identification tag on the first I/O network.
16. The method of claim 1, further including the steps of:
communicatively coupling a diagnostics tool and the first I/O network; and
accessing the first network identification tag via the diagnostic tool.
17. The method of claim 16, wherein the step of accessing the first network identification tag includes the step of issuing a request for the first network identification tag on the first I/O network.
18. The method of claim 16, wherein the step of accessing the first network identification tag includes the step of listening for the first network identification tag on the first I/O network.
19. The method of claim 16, further including the step of identifying a communication protocol for the first I/O network.
- 15 20. The method of claim 16, further including the steps of:
interpreting the received first network identification tag; and
providing an indication representative of the identity of the first I/O network on the diagnostic tool.
- 20 21. The method of claim 20, wherein the step of providing the indication representative of the identity of the first I/O network includes the step of displaying the first network identification tag on the diagnostic tool.
22. The method of claim 20, wherein the step of providing the indication representative of the first I/O network includes the step of displaying the first I/O network

within a configuration diagram.

23. The method of claim 16, further including the steps of:
accepting a user provided network identifier for a selected I/O network as an
input;

5 storing the user provided network identifier;
receiving the first network identification tag from the first I/O network;
comparing the identity of the I/O network associated with the user provided
network identifier with the identity of the I/O network associated with the first network
identification tag;

10 generating a first indication if the identity of the I/O network associated with
the first network identification tag matches the identity of the I/O network associated with the
user provided network identifier; and

15 generating a second indication if the identity of the I/O network associated
with first network identification tag does not match the identity of the I/O network associated
with the user provided network identifier.

24. A process control system comprising:

20 a user interface;
one or more process controllers communicatively coupled to the user interface
and to a plurality of I/O networks including a first I/O network and a second I/O network;

make a first unique network identification tag available on the first I/O network; and

25 a second unit communicatively coupled to the second I/O network and adapted
to make a second unique network identification tag available on the second I/O network.

25. The process control system of claim 24, wherein the first unit includes a
routine adapted to be implemented on a processor to create the first network identification
tag.

26. The process control system of claim 24, wherein the first unit includes a routine adapted to be implemented on a processor to ascertain identification tags for each of two or more devices, wherein the two or more devices are communicatively coupled to create a communication pathway from the user interface to the first I/O network.

5 27. The process control system of claim 26, wherein the routine combines the identification tags for each of the two or more devices to create the first network identification tag.

10 28. The process control system of claim 27, wherein the routine concatenates the identification tags for each of the two or more devices to create the first network identification tag.

15 29. The process control system of claim 24, wherein the first unit includes a routine adapted to be implemented on a processor to ascertain a first unique identification tag for a first device communicatively coupled to the user interface and to the first I/O network and to use the first identification tag to create the first network identification tag.

30. The process control system of claim 29, wherein the first device comprises one of the one or more process controllers.

31. The process control system of claim 29, wherein the first device comprises an I/O device.

20 32. The process control system of claim 29, wherein the routine ascertains a second identification tag for a second device communicatively coupling the first device to the I/O network and uses the second identification tag to create the second network identification tag.

33. The process control system of claim 32, wherein the routine combines the first identification tag and the second identification tag to create the first network identification tag.

5 34. The process control system of claim 33, wherein the routine concatenates the first identification tag and the second identification tag to create the first network identification tag.

35. The process control system of claim 24, wherein the first unit comprises a memory and a routine adapted to be implemented on a processor within one of the one or more process controllers.

10 36. The process control system of claim 24, wherein the first unit includes an I/O device communicatively coupled to the first I/O network.

15 37. The process control system of claim 36, wherein the I/O device comprises an I/O interface.

38. The process control system of claim 36, wherein the I/O device comprises an I/O carrier.

39. The process control system of claim 24, wherein the first unit includes a routine adapted to be implemented on a processor to make the first network identification tag available on the first I/O network in response to a request for the first network identification tag on the first I/O network.

40. The process control system of claim 24, wherein the first unit includes a routine adapted to be implemented on a processor to make the first network identification tag available on the first I/O network on a periodic basis.

5 41. The process control system of claim 24, wherein the first I/O network comprises a bus.

42. The process control system of claim 24, wherein the first I/O network comprises a bus adapted to support multiplexed communications.

43. The process control system of claim 24, further including a diagnostic tool adapted to be communicatively coupled to the first I/O network and includes a routine adapted to be implemented on a processor to access the first network identification tag on the first I/O network.

44. The process control system of claim 43, wherein the routine issues a request for the first network identification tag on the first I/O network.

15 45. The process control system of claim 43, wherein the routine listens for the first network identification tag on the first I/O network.

46. The process control system of claim 43, wherein the routine identifies the communication protocol for the first I/O network.

20 47. The process control system of claim 43, wherein the routine interprets the first network identification tag received on the I/O network and provides an indication identifying the first I/O network on the diagnostic tool.

48. The process control system of claim 47, wherein the routine displays the first network identification tag on the diagnostic tool.

49. The process control system of claim 47, wherein the routine displays the identity of the first I/O network within a configuration diagram.

50. A diagnostic tool for identifying a selected I/O network in a process control system having a plurality of I/O networks, wherein a device communicatively coupled to the selected I/O network is adapted to make a network identification tag available on the selected I/O network, the diagnostic tool comprising:

- a port adapted to be communicatively coupled to the selected I/O network;
- a computer readable memory;
- a processor;

a first routine stored on the computer readable memory and adapted to be implemented on the processor to receive the network identification tag from the selected I/O network; and

a second routine stored on the computer readable memory and adapted to be implemented on the processor to identify the selected I/O network based on the received network identification tag.

51. The diagnostic tool of claim 50, wherein the first routine issues a request for the network identification tag over the selected I/O network.

52. The diagnostic tool of claim 50, wherein the first routine listens for the network identification tag being periodically transmitted on the selected I/O network.

53. The diagnostics tool of claim 50, further including a third routine stored on the computer readable memory and adapted to be implemented on the processor to identify a communication protocol used on the selected I/O network.

54. The diagnostics tool of claim 50, further including a third routine stored on the computer readable memory and adapted to be implemented on the processor to provide an indication representative of the identity of the selected I/O network.

55. The diagnostics tool of claim 54, wherein the third routine displays the received network identification tag on the diagnostic tool.

56. The diagnostic tool of claim 54, wherein the third routine displays the identity of the I/O network associated with the received network identification tag using a configuration diagram.

57. The diagnostic tool of claim 54, wherein the third routine identifies the I/O network associated with the received network identification tag using a network configuration database.

58. The diagnostics tool of claim 50, further including:

10 a third routine stored on the computer readable memory and adapted to be implemented on the processor to accept an indication of one of the plurality of I/O networks as an input;

15 a fourth routine stored on the computer readable memory and adapted to be implemented on the processor to compare the identity of the I/O network associated with the network identification tag received from the selected I/O network with identity of the I/O network associated with the indication of the one of the plurality of the I/O networks;

20 a fifth routine stored on the computer readable memory and adapted to be implemented on the processor to generate a first indication if the identity of the I/O network associated with the network identification tag received from the selected I/O network matches the identity of the I/O network associated with the indication of the one plurality of I/O networks; and

25 a sixth routine stored on a computer readable memory and adapted to be implemented on the processor to generate a second indication if the identity of the I/O network associated with the network identification tag received from the selected I/O network does not match the identity of the I/O network associated with the indication of the one of the plurality of I/O networks.